

# Work Order ID 57938

April 20, 2010 3:38:24 PM



Page 1

Item ID: D2580-1

Accept



Setup Start



Revision ID:

Item Name: 205 Skidtube bent detail

Stop



Start Date: 20/04/2010 Start Qty: 2.00



Cust Item ID:

Required Date: 23/04/2010 Req'd Qty: 2.00



Customer:

Reference:

Approvals:

Process Plan:

*RL*

Date: 10-4-20

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Draw  
Number

Draw  
Rev.

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

Draw Nbr

Revision Nbr

D2580

Rev D

100

0.00

HandFinish

Memo

0.00

Hand Finishing

1- Inspect mat'l D2500-I-190 for damage.

2- Chemical Conversion Coat as per QSI 005 4.1

101

QC3- Inspect Part Finish

0.00

QC

Memo

0.00

Quality Control

2 - - AWM 10-4-23

② 11/24/23

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Work Order ID 57938

April 20, 2010 3:38:24 PM

Page 2

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Item Name: 205 Skidtube bent detail

Start Date: 20/04/2010 Start Qty: 2.00

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Required Date: 23/04/2010 Req'd Qty: 2.00

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_  
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start  
Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
110  Skidtubes		0.00							
Skidtubes	Memo	0.00				2	-		AWM 10-4-21
	1-Drill pilot holes using drill jig DT 8149 (Do not use cutting fluid)								
	2-Open holes to 0.500" as per Dwg D2580 without cutting fluid								
	3-Deburr and blow out all chips from inside of tube								
	4-Bond web in place per QSI 015. <input type="checkbox"/> <input type="checkbox"/> A/R Sikaflex-291 batch: 112429 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Sikaflex expire date: 10-8-29								
	Start time: _____ bond for 12hrs -29:00								
130  QC	QC5- Inspect part completeness to step on W/O	0.00							
Quality Control	Memo	0.00							



10-4-26

(2)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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Page 3

Item ID: D2580-1

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Item Name: 205 Skidtube bent detail

Stop



Start Date: 20/04/2010 Start Qty: 2.00



Cust Item ID:

Required Date: 23/04/2010 Req'd Qty: 2.00



Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_  
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start



Stop



Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Draw  
Number

Draw  
Rev. Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

140

Identify as per dwg & Stock Location: 4/6

0.00



Packaging

Memo

0.00

Packaging

NP

10-4-26

(2)

150

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

10/04/26

MF  
10-4-26

W/O:		WORK ORDER CHANGES					
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**NOTE:** Date & initial all entries

# Picklist Print

April 20, 2010 3:38:29 PM

Page 1

Work Order ID: 57938

Parent Item: D2580-1

Parent Item Name: 205 Skidtube bent detail


Comments: IPP B01.11.08 Revised Step 9, 10, 12, and 13 SM

Start Date: 20/04/2010

Required Date: 23/04/2010

Start Qty: 2.00

Required Qty: 2.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D2500-1-190  Ext'n - 'I' Beam Tube 4"		Manufactured	No				Each	56.0000	2.0000			

## Warehouse

## Loc Qty

## Loc Code

### Location

Main Warehouse

LG

52319

56

56

110

Each

4.0000

2.0000

AWM 10-4-20 (2)

D2596



Web, 205 Skidtube

Manufactured

No

## Warehouse

## Loc Qty

## Loc Code

### Location

Main Warehouse

LG

8

Main Warehouse

LG46

57540

4

4

AWM 10-4-20 (2)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



**DART**

DESIGN <i>[Signature]</i>	DRAWN BY <i>[Signature]</i>	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D2580	REV. D SHEET 1 OF 3
DATE 07.02.27		TITLE 205 SKIDTUBE ASSEMBLY SCALE NTS	
A	96.09.16	NEW ISSUE	
B	96.12.02	AS MANUFACTURED	
C	98.08.26	REDRAWN, INCLUDED DEO 9094/9097	
D	07.02.27	CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124/9183	

**RELEASED**  
07-06-28 *[Signature]*

QTY -041	QTY -045	Part Number	Description
X		D2580-041	SKIDTUBE ASSEMBLY
	X	D2580-045	SKIDTUBE ASSEMBLY
1	1	D2500-1-190	EXTRUSION
1	1	D2576-3	STEP
20	24	D2579	CROSS BOLT SPACER
16	16	D2594-1	PLUG
16	16	D2594-3	O-RING
1	1	D2596	205 WEB
1	1	D2855	AFT CAP
1	1	D3564-5	WEARSHOE
1	1	D3564-9	WEARSHOE
1	1	D3564-11	WEARSHOE
1	1	D3564-13	WEARSHOE
2	2	D3566-1	GASKET
1	1	D3566-5	GASKET
1	1	D3566-13	GASKET
50	50	ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or AELS-1032-130	INSERT
50	50	AN3C4A	BOLT
2	2	AN3-5A	BOLT
50	50	AN960C10L	WASHER
2	2	AN960JD10L	WASHER

SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 37928

*BS10-4-20*

**GENERAL NOTES:**

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) ALL DIMENSIONS ARE IN INCHES
- 3) INSERT D2596 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 4) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 5) USE DART DRILL TEMPLATE TD2577-205 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION D-D (50 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND AN960C10L WASHERS WITH SIKAFLEX-241/-291.
- 6) WELDING TO BE DONE PER DART QSI 004.
- 7) FINISH:  
SEE NOTES ON  
PAGE 2 FOR D2580-041 AND  
PAGE 3 FOR D2580-045
- 8) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (16 PLACES).

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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**NOTE:** Date & initial all entries

RELEASED  
07-06-28

Diagram illustrating the underside of the D2576-3 step, showing the location of the GRIND FLUSH (4 PLACES) and the LOCATION RIDGE ON UNDERSIDE OF D2576.

Diagram illustrating the assembly of a circular component, likely a cap or seal, showing the following parts and dimensions:

- DRILL PRIOR TO, D2855 CAP INSTALLATION (2 PLACES)**: Points to two locations on the outer rim of the cap.
- SEAL WITH SIKAFLEX-241/-291**: Points to the outer rim of the cap.
- AN3-5A BOLT (1)**: Points to a bolt passing through the center of the cap.
- AN960J10L WASHER (1)**: Points to a washer located between the bolt and the cap.
- D2855 CAP**: Points to the main body of the cap.
- 0.40**: Dimension indicating the thickness of the cap.

Diagram of a circular cross-section of a propeller hub. Labels include: D2579 SPACER, D2596 WEB (REF), ALS7-1032-130 (REF) (TYP 50 PLACES), and AFTER PERFORM 1. CHA 2. INSU 3. WE 4. C'B.

AFTER DRILLING AND BENDING ASSEMBLY  
PERFORM THE FOLLOWING FOR  $\phi 0.508$  HOLES ONLY:

1. CHAMFER HOLE  $0.050 \times 45^\circ$
2. INSERT D2579 SPACER (20 PLACES)
3. WELD INTO PLACE AND GRIND FLUSH
4. C'BORE D2579 SPACER TO  $\phi 0.437 \times 1.00$  DEEP

i) FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB POWDER COAT ASSEMBLY GLOSS WHITE (REF. 4.3.5.1) PER DART QSI 005 4.3 BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4

37.50  
DISTANCE TO AFT END  
OF D2596 WEB

38.0

CL

7 EQUAL SPACES  
8.188 PITCH

57.313 (REF)

190.0  
(D2500-1)

91.500

34.188

26.000

17.375

8.750

1.750

1.750

#0.508 (TYP.)  
(40 PLACES)

REFER TO DETAIL A

REFER TO DETAIL A

0.5 1.5 1.5 D P P P P P P P

BLACK ANTI-SKID TO 0.5 ABOVE LOCATION RIDGE

BLACK ANTI-SKID TOP OF STEP TO 0.5 ABOVE BOTTOM EDGE

WELD AS PER DETAIL B

REFER TO DETAIL C

D3566-1 D3566-5 D3566-1 D3566-13

D3564-11 D3564-5 D3564-9 D3564-13

AN3C4A BOLT (1)  
AN960C10L WASHER (1)  
(50 PLACES)

DESIGN: DRAWN BY:

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CHECKED	<i>[Signature]</i>	APPROVED	<i>[Signature]</i>
DATE			
07.02.27			

**DART** DART AEROSPACE LTD.  
HAWTHORNSIDE, ONTARIO, CANADA

DRAWING NO. D2580	REV. 1 18 6	SHEET 2 OF 2
TITLE 205 SKIDTUBE ASSEMBLY	SCALE 1:2	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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RELEASED  
07-28-28

Diagram illustrating the grinding locations for the propeller cross-section. The diagram shows a cross-section of a propeller with the following labels and features:

- GRIND FLUSH (4 PLACES)**: Indicated by four small circles along the top edge of the propeller.
- GRIND FLUSH**: Indicated by a small circle on the left side of the propeller.
- D2576-3 STEP**: Indicated by a line pointing to the top edge of the propeller.
- GRIND FLUSH**: Indicated by a small circle on the right side of the propeller.
- LOCATION RIDGE ON UNDERSIDE OF D2576**: Indicated by a line pointing to the bottom edge of the propeller.

DRILL PRIOR TO D2855 CAP  
INSTALLATION (2 PLACES)

AN3-5A BOLT (1)  
AN960J10L WASHER (1)  
(2 PLACES)

D2855 CAP

SEAL WITH  
SIKAFLEX-241/-291

SEE NOTE ii)

#0.208

0.40

1

D2579 SPACER

D2596 WEB (REF)

5

ALS7-1032-130 (REF)  
(TYP 50 PLACES)

AFTER DRILLING AND BENDING ASSEMBLY PERFORM THE FOLLOWING FOR #0.508 HOLES ONLY:


1. CHAMFER HOLE 0.050 X 45°
2. INSERT D2579 SPACER (20 PLACES)
3. WELD INTO PLACE AND GRIND FLUSH
4. C'BORE D2579 SPACER TO #0.437 X 1.00 DEEP

i) FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB POWDER COAT ENTIRE ASSEMBLY GREEN (REF. 4.3.5.8) PER DART QSI 005 4.3 BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4

ii) IT IS ACCEPTABLE TO GRIND A RELIEF IN THE D2855 AFT CAP TO PREVENT INTERFERENCE WITH THE SPACER AT THIS LOCATION

[illegible][illegible][illegible]

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 <b>DART AEROSPACE LTD.</b> HAINESBURY, ONTARIO, CANADA	
DRAWING NO.	REV. C
D2580	SHEET 3 OF 3
TITLE	SCALE
205 SKIDTUBE ASSEMBLY	1:24

W/O:		WORK ORDER CHANGES					
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